UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/076,964	02/15/2002	Herbert F. Cattell	10010327-1	1474

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EXAMINER
BASOM, BLAINE T

ART UNIT	PAPER NUMBER
2173	

DATE MAILED: 10/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/076,964	CATTELL ET AL.
	Examiner	Art Unit	
	Blaine Basom	2173	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on *17 July 2006*.

2a) ☐ This action is **FINAL.**   2b) ☒ This action is non-final.

3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) *15-37* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) ☐ Claim(s) _____ is/are allowed.

6) ☒ Claim(s) *15-37* is/are rejected.

7) ☐ Claim(s) _____ is/are objected to.

8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.

10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a) ☐ All   b) ☐ Some * c) ☐ None of:

      1. ☐ Certified copies of the priority documents have been received.

      2. ☐ Certified copies of the priority documents have been received in Application No. _____.

      3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

The Examiner acknowledges the Applicant's amendments to independent claims 15 and

27 of the present Application. Regarding claims 15 and 27, the Applicants submit that the

language reciting, "each graphically distinct graphical object represents a single characteristic of

the data that is distinct from other characteristics represented by others of the graphically distinct

graphical objects," as added by amendment, overcomes the "ScanAlyze" and "Dapple"

references cited in the previous Office Action. Such was asserted by the Examiner in the

telephone interview of 6/29/2006. However, upon further review of the references, the Examiner

has come to the conclusion the ScanAlyze in fact reads on the added language. Like more

clearly described below, ScanAlyze teaches flagging with a bold outline a set of one or more

microarray image spots according to a first set of user specified characteristics. The user may

then specify a second set of characteristics, including characteristics that are distinct from the

first set, to flag a second set of spots. In such circumstances, each graphically distinct graphical

object (i.e. bold outline) in the first set of flagged spots represents a single characteristic of the

data that is distinct from other characteristics represented by the second set of the graphically

distinct graphical objects. As the Examiner has previously, and incorrectly, indicated that

ScanAlyze fails to teach this feature, this Office Action is non-final.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the

basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 15, 18, 24-33, and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by

the "ScanAlyze" program, as is described by the "ScanAlyze User Manual." In general,

ScanAlyze is a program for the analysis of DNA microarrays (see page 4).

Specifically regarding claims 15 and 27, ScanAlyze involves displaying an image of a

molecular array, whereby the user can "flag" spots according to various parameters, the flagged

spots being indicated by a bold outline over their corresponding location on the array image (for

example, see pages 19 and 25). Such flagging is used to indicate one or more characteristics

("Ch1D," "Ch2D," "Ch1B," "Ch2B," "Ch1D/B," "Ch2D/B," "Ch1GTB1," "Ch2GTB1,"

"Ch1KSD," and/or "Ch2KSD") of the array data (for example, see pages 19 and 25). It is

apparent that thus user may arbitrarily choose one or more of these characteristics to flag spots,

resulting in a first set of bold outlines being superimposed over the image, and then choose a

different one or more of these characteristics, resulting in a second set of bold outlines being

superimposed over the array image. As the first set of bold outlines are displayed separately

from the second set of bold outlines, the first set of bold outlines are considered graphically

distinct from the second set. The user may thus sequentially superimpose two sets of graphically

distinct graphical objects (i.e. bold outlines) representing at least two sets of characteristics of the

data on the molecular array, wherein graphical objects representing a first set of characteristics

are graphically distinct from graphical objects representing a second set of characteristics, and if

the user so chooses, each graphically distinct graphical object representing the first set can

represent a single characteristic of the data ("Ch1D," "Ch2D," "Ch1B," "Ch2B," "Ch1D/B,"

"Ch2D/B," "Ch1GTB1," "Ch2GTB1," "Ch1KSD," or "Ch2KSD") that is distinct from the

second set of characteristics, each graphically distinct graphical object being superimposed over

positions where the data characteristics represented occur on the displayed image of the

molecular array (for example, see pages 19 and 25). Accordingly, ScanAlyze is considered to

teach a method like that of claim 15. By the same reasoning, the graphical user interface of the

ScanAlyze program is considered a graphical user interface like that recited in claim 27.

Regarding claims 18, 28-33 and 37, the characteristics in which the distinct graphical

objects are superimposed are selected by the user (see page 19), and are related to the validity of

the background, the validity of the feature, and the location of the feature (see page 25). Such

graphical objects thus may be used to indicate: a statistically valid feature; a statistically invalid

feature; a statistically valid feature background; a statistically invalid feature background; an

outlier feature due to non-uniformity of pixel intensities within the feature, due to statistical

variance in signal intensity from other features, or due to both non-uniformity of pixel intensities

and statistical variance in signal intensities; and outlier feature background due to non-uniformity

of pixel intensity with the background, due to statistical variation of the background region from

the background regions surrounding other features of the array, or due to both non-uniformity of

pixel intensities and statistical various of the background region; or a position of a center of a

feature found by analyzing pixel intensities within and near the feature or by row and column

indices and a refined feature grid determined from locations of strong features identified. As it is

to the user's discretion regarding the use of these distinct graphical objects, it is understood that they may optionally be superimposed only over statistical outlier features and feature backgrounds.

As per claims 24-26, ScanAlyze teaches reading a sample-exposed array, and visually displaying results using the method described above. It is understood that the user may further process the results, for example, by adjusting parameter values (as done in page 19, for example). As such results are maintained on a computer, presumably via a file, it is understood that such results may be forwarded to a remote location, as is well-known in the art.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 16-17 and 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over the ScanAlyze application, as is described above, over U.S. Patent No. 6,453,251, which is attributed to Bassett, Jr. et al. (hereafter referred to as "Bassett"), and also over U.S. Patent No. 6,437,800, which is attributed to Malamud et al. (and hereafter referred to as "Malamud"). As described above, ScanAlyze teaches a method like that recited in each of claims 15 and 27, whereby a molecular array image is displayed concurrently with feature extraction results associated therewith. It is understood that a user may position a pointer over the position of a

feature, to flag a feature for example (for example, see page 18). Regarding the claimed

invention, however, ScanAlyze does not explicitly disclose that alphanumeric information

related to a selected feature is displayed in response to selecting the feature, as is expressed in

claims 16-17 and 34-35. Like ScanAlyze, Bassett describes a program for analyzing microarray

data (for example, see column 1, line 36 – column 2, line 10). Bassett particularly teaches

displaying an image of a microarray, whereby the user may select a spot within the array,

resulting in the display of a panel that presents specific information about the selected spot (for

example, see figure 6, and its associated description at column 13, line 66 – column 14, line 13).

It would have therefore been obvious to one of ordinary skill in the art, having the teachings of

ScanAlyze and Bassett before him at the time the invention was made, to modify the user

interface of ScanAlyze to include functionality of Bassett, so that in response to selecting a spot,

alphanumeric data associated with that feature is displayed. It would have been advantageous to

one of ordinary skill to utilize this combination because such functionality provides the user with

an efficient and easy means for obtaining specified information about any spot, as is

demonstrated by Bassett. ScanAlyze and Bassett thus teach receiving an input indication of a

feature, i.e. spot, and displaying an alphanumeric representation of information related to the

feature, including results from a feature extraction process. Neither ScanAlyze nor Bassett,

however, explicitly teach displaying such alphanumeric information within a tooltip, as is

claimed. Nevertheless, tooltips are well known in the art. For example, Malamud teaches

displaying a tooltip in response to a user positioning a pointer over a graphical object, wherein

the tooltip displays alphanumeric information associated with the object (for example, see

column 1, lines 34-49; and column 3, lines 26-47). It would have therefore been obvious to one

of ordinary skill in the art, having the teachings of ScanAlyze and Malamud before him at the time the invention was made, to modify the user interface of ScanAlyze to include the tooltips of Malamud, so that in response to positioning a cursor over a feature, alphanumeric data associated with that feature is displayed in a tooltip. It would have been advantageous to one of ordinary skill to utilize this combination because such tooltips may reduce confusion and the burden of the user when viewing data associated with a feature, as is taught by Malamud (for example, see column 1, lines 15-43).

Claims 19-23 and 36 are rejected under 35 U.S.C. 103(a) as being unpatentable over the ScanAlyze application, as described above, and also over the "Dapple" application, as described by the article entitled, "Dapple: Improved Techniques for Finding Spots on DNA Microarrays," which is attributed to Buhler et al. (and hereafter referred to as "Buhler"). As described above, ScanAlyze involves displaying distinct graphical objects superimposed over features of a molecular array. The characteristics in which the distinct graphical objects are superimposed are selected by the user (see page 19), and are related to the validity of the background, the validity of the feature, and the location of the feature (see page 25). Such graphical objects thus may be used to indicate: a statistically valid feature; a statistically invalid feature; a statistically valid feature background; a statistically invalid feature background; an outlier feature due to non-uniformity of pixel intensities within the feature, due to statistical variance in signal intensity from other features, or due to both non-uniformity of pixel intensities and statistical variance in signal intensities; and outlier feature background due to non-uniformity of pixel intensity with the background, due to statistical variation of the background region from the background

regions surrounding other features of the array, or due to both non-uniformity of pixel intensities and statistical various of the background region; or a position of a center of a feature found by analyzing pixel intensities within and near the feature or by row and column indices and a refined feature grid determined from locations of strong features identified. ScanAlyze, however, does not involve using distinct types of indications, distinct from the others in terms of shape or color, to indicate such characteristics. Like ScanAlyze, Dapple is an application used for displaying and analyzing molecular arrays (see the "Introduction" on page 1). Dapple particularly teaches marking spots using a plurality of distinct graphical objects, to indicate valid features, invalid features, and "intermediate" quality features (see 3.3 on page 5), and is therefore understood to involve distinct types of indications, distinct from the others in terms of shape or color, to indicate such characteristics. Accordingly it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the ScanAlyze application by using different types of indications to indicate valid features, valid feature backgrounds, invalid features, invalid feature backgrounds, and positions of features, as taught by Dapple. One would have been motivated to create such a combination because such different types of indications aid the user in analyzing a molecular array, as is demonstrated by Dapple. As such indications are arbitrary, these indications may comprise figures like recited in claims 20 and 21, and have colors like expressed in claims 22 and 23.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Blaine Basom whose telephone number is (571) 272-4044. The examiner can normally be reached on Monday through Friday, from 8:30 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kristine Kincaid can be reached on (571) 272-4063. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

btb
10/13/2006

TADESSE HAILU
Patent Examiner